AMENDMENTS TO THE SPECIFICATION

Please amend the paragraph beginning on page 1 line 22 and ending on page 2 line 19 the Specification as follows:

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Co-pending and co-assigned United States Patent Application No. 09/539,707 filed on March 31, 2000, and entitled METHOD AND SYSTEM FOR ESTABLISHING CONTENT-FLEXIBLE CONNECTIONS IN A COMMUNICATIONS NETWORK teaches a technique for establishing an open connection (OP-N), mapped across a communications network. The OP-N connection is "concatenatable", in that an end user can transport arbitrarily concatenated signal traffic through the OP-N connection. In principle, virtually any combination of concatenated and non-concatenated signals may be used, up to the bandwidth capacity of the OP-N connection. The traffic mixture (i.e., the mix of concatenated and non-concatenated traffic) ~~within~~ conveyed through the OP-N connection can be selected by the end user to satisfy their requirements, and may be changed by the end user as those requirements change, without requiring re-configuration of the OP-N connection. For example, with an OP-6O connection (i.e. N=60, so that the connection has a bandwidth capacity equivalent to an Optical Carrier OC-60 signal) an end user could arbitrarily change from a traffic mix of five STS-12c signals to one OC-48c and 12 (unconcatenated) STS-1 signals or two STS-24 and two STM-4 signals as required. Other traffic combinations are also possible, all at the discretion of the end user, and without intervention from a network service provider.

Please amend the paragraph beginning on page 15 line 13 and ending on page 16 line 16 of the Specification as follows:

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The present invention enables transport of high-bandwidth, arbitrarily concatenated signals through a hyper-concatenated OPen (OP-N) connection 24, hereinafter referred to as a hyper-concatenated connection 24, mapped across at least a part of a communications network 10 between a start node 18a and an end node 18b, via the cross-connects 12a,b and Add/Drop multiplexer (ADM) ~~14b~~14a. At least one of the optical cross-connects 12a,b and ADM ~~14b~~ 14a performs independent pointer processing on data frames transferred over the hyper-concatenated connection 24. The hyper-concatenated connection 24 has a bandwidth capacity equivalent to N STS-1 signals. Within that bandwidth capacity, arbitrary signal

concatenation is supported. The hyper-concatenated connection includes four hops 24a-24d, each of which is supported by a respective node pair, for example start node 18a - optical cross-connect 12a, etc. In a WDM (or DWDM) network, each channel is an optical wavelength used for transport of data traffic between nodes. Within each hop, the channels of a hyper-concatenated connection may be multiplexed together and launched through a single optical fiber, or distributed over two or more parallel optical fibers. Within each node, the channels are demultiplexed, processed and then routed to a downstream hop on a per/channel basis. The wavelength used to convey each channel may be the same or different for each successive hop 24a-d of the hyper-concatenated connection 24. In the example shown in FIG. 1, the source node 18a and the end node 18b are located at respective edges of the optical network. The intervening optical cross-connects 12a,b and the ADM ~~14b~~ 14a are used to support the OP-N connection. As noted above, at least one of the optical cross-connects 12a,b and the ADM ~~14b~~ 14a is not large enough to fully support the hyper-concatenated connection as described in Applicant's co-pending patent application referenced above.

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Please amend the paragraph beginning on page 16 line 17 and ending on page 17 line 16 of the Specification as follows:

Fig. 2 is a schematic diagram illustrating ~~an exemplary~~a representative set-up of the hyper-concatenated connection 24 mapped between the source and end nodes 18a and 18b. In the illustrated embodiment, the hyper-concatenated connection 24 is an OP-192 connection, thus having a bandwidth equivalent to N = 192 STS-1 signals. Within this connection, signal concatenation is not provisioned, so that an arbitrary concatenation scheme (up to the bandwidth capacity of the hyper-concatenated connection) can be defined by an end user. As shown in Fig. 2, the hyper-concatenated connection 24 may be constructed using a layered model. For example, the network service provider may elect to set up high bandwidth OP-N core connections between cross-connects 12a, 12b within the core of the network. In the illustrated example, these high bandwidth core connections include an OP-768 core connection 26 set up between the first and second cross-connects 12a and 12b. The hyper-concatenated connection 24 is set up, for example, by a network service provider in response to a request from an end user for an end-to-end open connection having a bandwidth of N = 192. Setting up this end-to-end open connection requires that the network service provider establish

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feeder OP-192 connections 28 and 30 between the start node 18a and the first cross-connect 12a, and between the second cross-connect 12b and the end node 18b. These feeder OP-192 connections 28,30 are then linked by a virtual OP-192 connection 32 which is set up by allocating a portion of the bandwidth of the OP-768 core connection 26 previously established between the two cross-connects 12a and 12b.

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Please amend the paragraph beginning on page 18 line 3 and ending on page 18 line 14 of the Specification as follows:

Channel selection for the hyper-concatenated connection 24 involves selecting a set of candidate channels for the hyper-concatenated connection 24, and then validating each of the candidate channels for use as hyper-concatenated channels. The channels are "independent" in that the respective data streams may be subject to independent pointer processing at any intermediate nodes between the start node 18a and the end node 18b. Thus in the illustrated embodiment, the optical cross-connects 12a,b and the ADM ~~14b~~ 14a can be legacy optical nodes. Exemplary criteria used for validating each of the candidate channels include:

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Please amend the paragraph beginning on page 29 line 10 and ending on page 29 line 21 of the specification as follows:

Thus constructed, each derived signal 44 is indistinguishable from a standard SONET/SDH signal STS-M signal (M=48 in this example), and each derived signal may be routed through independent pointer processors, even through ~~independent~~ different optical fibers provided that the signal skew at the end node 18b is within certain predefined tolerances. However, the presence of the split indicators in the leading frame of each of the derived signals 44b-d, as required, enables reconstruction of the high bandwidth signal at the end node 18b, as will be described in greater detail below. The split indicators must not be corrupted by the intermediate equipment.

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Please amend the paragraph beginning on page 29 line 23 and ending on page 30 line 5 as follows:

As mentioned above, each derived STS-M signal 44a-d is indistinguishable from any standard SONET/SDH signal. Accordingly, each of the derived STS-M signals 44 can be routed across the network 10 between the start node 18a and end node 18b using conventional SONET/SDH routing equipment and methods. Each derived STS-M signal 44a-d can be routed independently, and thus may follow different paths through the network 10 and may be subject to independent pointer processing at intermediate nodes 12a,b, ~~14b~~14a. However, if the split described above were not performed, these signals could not be transported independently as there would be no pointer information, only concatenation indicators at the split locations.

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Please amend the paragraph beginning on page 30 line 24 and ending on page 31 line 6 as follows:

As explained above, at each node 12a,b, ~~14b~~ 14a intermediate the start node 18a and the end node 18b, each of the derived signals 44 may be pointer processed in a conventional manner by independent pointer processing state machines. Because the SS field in the frame overhead is generally unused, the split indicator passes through each pointer processing state machine unchanged, so that signaling is preserved. It will be appreciated that any other location within the frame may be used to store the split indicator, provided that the selected location is passed through each pointer processor state machine unchanged. An advantage of using the SS field is that this location avoids incurring signaling delay or misconnection of the signals.

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